



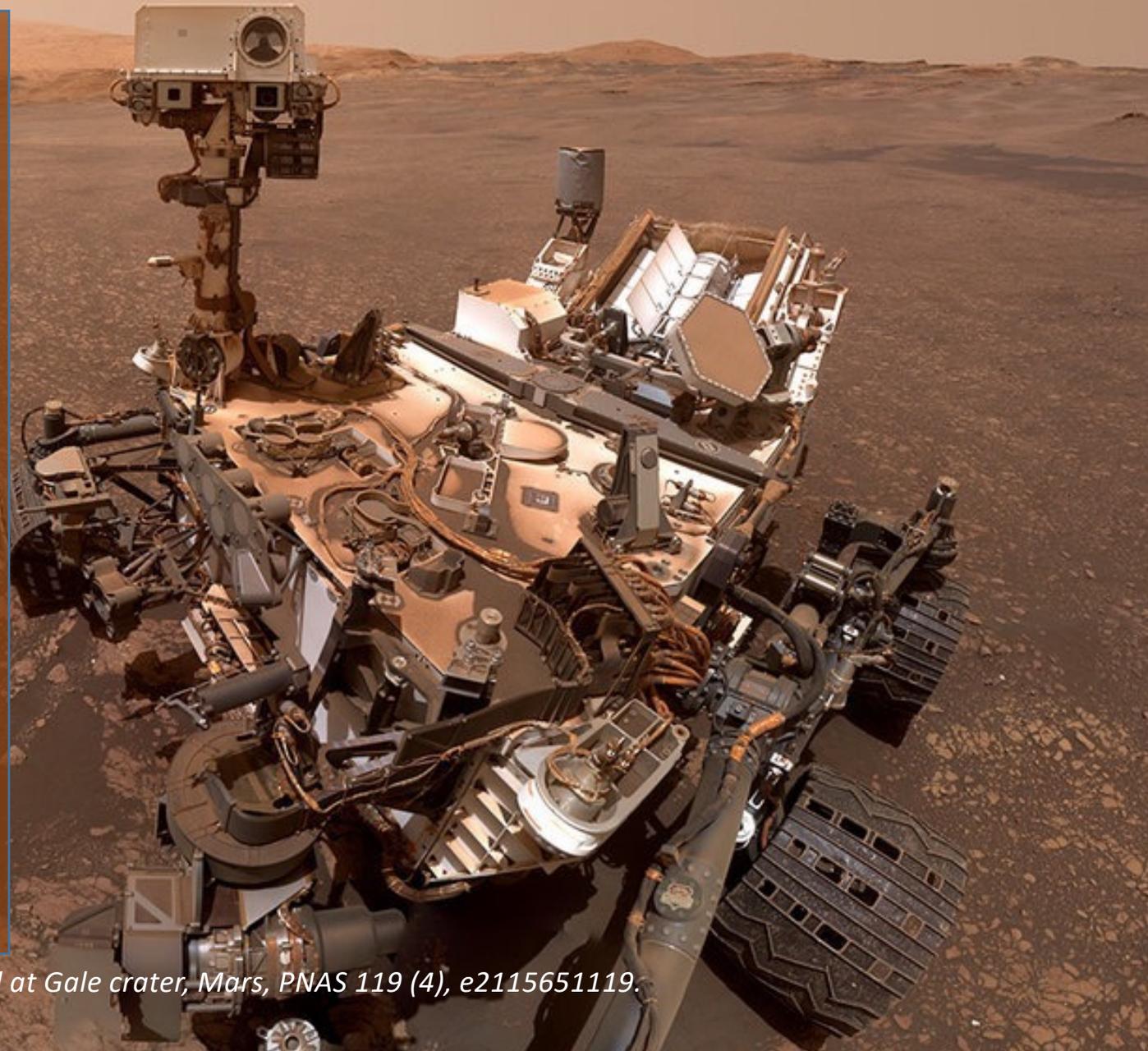
# Curious Carbon Measurements on Mars



One signature of biological activity on early Earth is a reduced ratio of the heavy to light carbon preserved in rocks formed by microbial activity. The team analyzing isotope data from the SAM experiment on the Curiosity rover was greatly intrigued to find a similar signature in gas released from samples of powdered rocks formed more than 3 billion years ago in Gale crater.

Confidently concluding that there was indeed microbial life on early Mars would require additional supporting evidence, such as an abundance of complex molecules produced by life or evidence of microbial mats. Other hypotheses for this observation that do not require biology include chemical reactions in the atmosphere of early Mars and delivery from space as the solar system passed through a giant molecular cloud.

The results of this discovery motivate ongoing and future investigations with the SAM experiment as the Curiosity rover continues its exploration of Mount Sharpe and Gale Crater.



House, C. H. et al., (2022), *Depleted carbon isotope compositions observed at Gale crater, Mars*, PNAS 119 (4), e2115651119.  
<https://doi.org/10.1073/pnas.2115651119>